

## Things to Know, Understand and Do For Chapter 4: Reactions in Aqueous Solutions

*By the end of Chapter 4*

<b>Know how to...</b>
1. Predict if a compound is a strong-, weak-, non- electrolyte in an aqueous solution given its name or formula
2. Predict solubilities of ionic compounds in water <b>from memory</b> using solubility rules handed out in class
3. Recognize what ions form when an ionic or molecular compound or acid or base is dissolved in water
4. Determine if an acid or base is strong or weak from its name or formula
5. Recognize acid anhydrides and base anhydrides and predict products of reactions when the anhydrides are dissolved in water
6. Recognize and predict products of acid/base; precipitation, combustion, and gas forming reactions
7. Write net ionic equations for any type of reaction and identify spectator ions
8. Recognize oxidation-reduction reactions and identify oxidizing and reducing agents and substances oxidized and reduced
9. Determine oxidation numbers of elements and any component of a compound
10. Predict products of and balance oxidation reduction reactions in both acidic and basic solutions
11. Know how to use a table of standard reduction potentials to rank strengths of oxidizing and reducing agents, to predict what substances can oxidize or reduce another species, and to predict whether redox reactions will be reactant- or product-favored
12. Calculate solute concentration in M, moles/L, and use concentrations in calculations
13. Describe how to prepare a solution of given molarity from the solute and solvent <b>or</b> from a more concentrated solution
14. Solve stoichiometry problems using solution concentrations
15. Explain how a titration is carried out, explain the procedure of standardization and calculate the concentration or amounts of reactants from titration data
<b>understand...</b>
1. The nature of ionic and molecular substances dissolved in water
2. The behavior of weak and strong acids or bases in aqueous solutions
3. The Arrhenius, Bronsted-Lowry and Lewis definitions of acids and bases and be able to apply them in appropriate reactions
4. The concept behind titrations and standardization of solution using a primary standard

### Ch 4 HW AP

p 171 Q 9, 10, 12, 18, 21a, 22  
 p 172 Q 23 b + d, 33, 35, 37  
 p 173 Q 43, 46, 48, 57  
 p 174 Q 60, 65, 67 a – d, 72, 74 a – c, 75  
 p 175 Q 77, 82, 87

### Student Presentations

p 172 Q 30 a, c  
 p 173 Q 53  
 p 175 Q 83